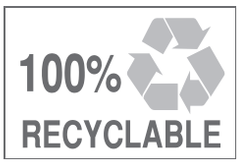
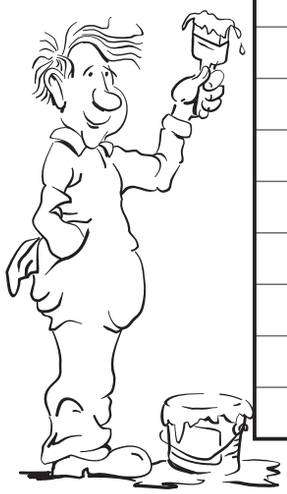
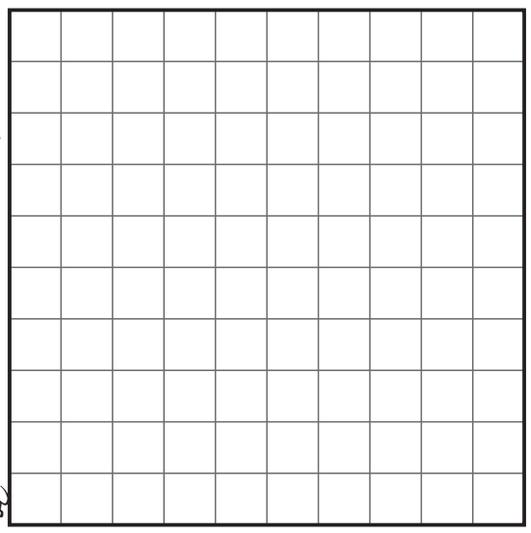
MATHS

Fractions and percentages.



1 Colour.





- 11 squares out of 100 are blue.
- 9 squares out of 100 are purple.
- 16 squares out of 100 are yellow.
- 14 squares out of 100 are pink.
- 13 squares out of 100 are brown.
- 15 squares out of 100 are red.
- 10 squares out of 100 are green.
- 6 squares out of 100 are orange.

How many squares are white? _____

_____ squares out of 100 are white.

2 Write.

How many pupils …		___ *pupils out of* ___ _____ .
a make their bed in the morning?		
b have cereal for breakfast?		
c go to school by car?		
d go home after school?		
e do their homework in the living room?		
f read in bed?		
How many pupils are there in class today?		

3 Write.

$$\frac{\text{number of pupils who make their bed in the morning}}{\text{total number of pupils in class}} \times 100 = \_\_\_\_\_ \times 100 = \_\_\_\_\_ \%$$

$$\frac{\text{number of pupils who read in bed}}{\text{total number of pupils in class}} \times 100 =$$

$$\frac{\text{number of pupils who have cereal for breakfast}}{\text{total number of pupils in class}} \times 100 =$$

$$\frac{\text{number of pupils who go to school by car}}{\text{total number of pupils in class}} \times 100 =$$

TEACHER'S NOTES

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Fractions and percentages.

Aim

- To study fractions and percentages.

Language focus

Key vocabulary: *square, percentage, per cent, numerator, denominator, divide, multiply.*

Key language: *10 times 10 equals a hundred. 15 pupils out of 20 make their bed in the morning. 75% of the pupils make their bed in the morning.*

Materials

- Worksheet.
- Coloured pencils.

Warm-up

- Write *1-100* on the board. Write a number between 1 and 100 on a piece of paper and keep it secret. Encourage a pupil to say a number between 1 and 100. If your secret number is higher, say (and explain using gestures) *higher.* If your secret number is lower, say *lower.* Pupils try to guess your secret number, eg, (secret number is 31) Pupil: *20?* Teacher: *Higher, the secret number is higher than 20.* P: *65?* T: *Lower, the secret number is lower. The secret number is between 20 and 65.* P: *40?* T: *Lower.* P: *30?* T: *Higher.* Pupil: *35?* T: *Lower.* P: *31?* T: *Yes! The secret number is 31!* Show the class the secret number. Repeat with different numbers.

Completing the Worksheet

Activity 1

- Draw a table with three rows and three columns on the board. Ask *How many squares are there? 9!* Explain that they can count each single square or multiply 3 x 3: 3 times 3 equals 9. Do two more examples, eg, 5 x 5 and 7 x 7.
- Draw a table with ten rows and ten columns (like the one on the worksheet). Ask *How many squares are there? 100! How do you know? 10 times 10 equals 100.* Write the letter A in 5 squares. Say (and write on the board) *5 out of 100 squares have got the letter A.* Point to the squares. Explain that *There are 100 squares all together and 5 of those squares have got the letter A.* Write on the board *4 squares out of 100 have got the letter B.* Invite a pupil to write the letter B in 4 squares. Encourage the class to say *4 squares out of 100 have got the letter B.* Write *7-C* and encourage the class to say *7 squares out of 100 have got the letter C.* Invite a pupil to write the letter C in 7 squares. Continue with a few more letters.
- Ask the pupils to read Activity 1 and colour the squares following the instructions. Do the first one together, eg, *How many squares are there all together? 100! 11 squares out of 100 are blue. How many squares are blue? 11! Colour 11 squares blue.*

Answers: There are 6 white squares. 6 squares out of 100 are white.

Extension activity

- Write on the board *11/100.* Explain that 11 is the number of blue squares and 100 is the total number of squares. *11 is the numerator and 100 is the denominator. A percentage (%) is a fraction with a denominator of 100.* 11 out of a hundred (11/100) is the same as 11 per cent (11%) but written in a different way. Repeat *11 per cent* a few times, stressing *per cent.* Encourage the pupils to repeat.
- Ask the pupils *how many purple squares are there? 9! 9 out of 100 (9/100) or 9 per cent.* Continue with the other colours.

Activity 2

- Ask the pupils to put their hands up if they make their bed in the morning. Count them and write the number on the board. Ask the pupils to write the number in the second column of the table in Activity 2. Encourage them to say *(15) pupils make their bed in the morning.* Continue with *have cereal for breakfast, go to school by car, go home after school, do their homework in the living room* and *read in bed.* Pupils write the numbers in the table.
- Ask *How many pupils are there in class today?* Ask the pupils to write the number in the grey box at the bottom of the table.
- Ask the pupils *How many pupils make their bed in the morning? (15)* Ask the pupils *How many pupils are there in class today? (20)* Write the fraction *number of pupils who make*

their bed / total number of students on the board *(15/20)*. Encourage the pupils to say *(15) pupils out of (20) make their bed in the morning*. Write the sentence on the board. Continue with the other routines using ___ *pupils out of* ____ _____. Ask the pupils to write sentences in Activity 2 following this model. Monitor their work and check their answers.

Extension activity

Arrange the pupils in groups of 6-8. Encourage them to choose a topic for a survey, eg, shopping, their last summer holidays, technology. Ask them to write three questions to ask the other students in their group. Elicit feedback, encouraging the pupils to use the structure ___ *pupils out of* ___ _____, eg, *2 pupils out of 8 have got a mobile phone. 5 pupils out of 8 do their homework on the computer. 4 pupils out of 8 send text messages to their friends.* You might have to teach *everybody* and/or *nobody,* eg, *8 out of 8 is everybody. 0 out of 8 is nobody.*

Activity 3

- Ask the pupils to look at the table in Activity 1 again. Ask *How many blue squares are there? 11! 11 out of 100 squares are blue* or *11% of the squares are blue*. Explain that *per cent* means *out of 100*. Continue with the other colours.
- Ask the pupils *How many pupils make their bed in the morning? (15). How many pupils are there in class today? (20). What percentage of pupils make their bed?* Explain that a percentage is *when the total number (or denominator) is 100. If the total number is not 100, we divide the nominator by the denominator and multiply by 100. This gives us the percentage, eg, 15/20 x 100 = 75%. 75% of the pupils make their bed in the morning.* 75% is the same as 75 out of 100.
- Do the first question together with the class. Write on the board a fraction with the number of pupils who make their bed at the top and the total number of pupils at the bottom, eg, *15/20.* Write *x 100* next to the fraction. *This gives us the percentage of pupils who make their bed in the morning.* The pupils continue in small groups. Monitor pupils' work and help weaker pupils as necessary. Check answers with the class.

Fast finishers activity

Write some puzzles on the board for fast finishers to solve, eg, *There are 11 boys and 14 girls in a class. What's the percentage of boys and girls in the class?* (11 + 14 = 25. 11/25 x 100 = 44% boys. 14/25 x 100 = 56% girls.)